1998 ASC Abstract

High-T_c SNS Edge Junctions with Ca-doped PBCO N-Layers*

J.B. BARNER*, Center for Space Microelectronics Technology, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA–We are investigating (Pr,Ca)-Ba-Cu-O(PCBCO) films for use as normal layers in Superconductor-Normal-Superconductor(SNS) edge junctions. Edges in the Y-Ba-Cu-O/Sr-Ti-O bilayer are formed by Ar ion milling utilizing reflowed-resist stencils on polyimide passivation layers. The edges fabricated by this method have been shown to be smooth and electrically clean. The resistivity of the PCBCO decreases with increasing Ca level and, for a Ca level of 0.5, we observe a superconducting transition (~25 K). Devices fabricated with these layers exhibited RSJ-like behavior and agreed qualitatively with conventional proximity effect model. Details of junction fabrication, current-voltage characteristics and the systematic dependence on Ca doping level and N-layer thickness will be presented.

*Sponsored by NASA/OSS.